

TITLE

## GENES ENCODING CAROTENOID COMPOUNDS

ABSTRACT OF THE DISCLOSURE

5 A unique carotenogenic biosynthetic gene cluster has been  
isolated from *Pantoea agglomerans* strain DC404, wherein the genetic  
organization of the cluster is *crtE-idi-crtY-crtI-crtB-crtZ*. The genes  
contained within this cluster encode geranylgeranyl pyrophosphate  
(GGPP) synthetase (CrtE), isopentenyl pyrophosphate isomerase (Idi),  
lycopene cyclase (CrtY), phytoene desaturase (CrtI), phytoene synthase  
10 (CrtB), and  $\beta$ -carotene hydroxylase (CrtZ). The gene cluster, genes and  
their products are useful for the conversion of farnesyl pyrophosphate to  
carotenoids. Vectors containing those DNA segments, host cells  
containing the vectors and methods for producing those enzymes by  
recombinant DNA technology in transformed host organisms are  
15 disclosed.

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